

WHAT IS CLAIMED IS:

1. A cooling chamber: comprising an illumination system that emits light, a knife surrounded by the cooling chamber, wherein the knife defines a surface, and a stereomicroscope provided outside the cooling chamber for the observation of the surface of the knife, whereby the illumination system is arranged such that the emitted light is directed onto the surface of the knife in such a way that the light reflects from the surface toward the stereomicroscope.
2. The cooling chamber as defined in Claim 1, wherein the illumination system is constructed from several LEDs.
3. The cooling chamber as defined in Claim 2, wherein segments of the several LEDs are capable of being switched on and off individually in order to implement an oblique illumination of the surface of the knife.
4. The cooling chamber as defined in Claim 2, wherein the illumination system is constructed from a first, a second, a third, a fourth, and a fifth LED.
5. The cooling chamber as defined in Claim 4, wherein operation of the first and the second LED implements an oblique illumination of the surface of the knife.
6. The cooling chamber as defined in Claim 4, wherein operation of the fourth and the fifth LED implements an oblique illumination of the surface of the knife.
7. The cooling chamber as defined in Claim 1, wherein the cooling chamber is cup-shaped and is closed off by a lid having an opening; and the illumination system is mounted directly under the lid of the cooling chamber.
8. A system of a cooling chamber with a microtome, comprising a knife defining a cutting edge, a sample holder, wherein the knife and the sample holder are arranged in the cooling chamber and opposite to each other, a stereomicroscope positioned on the microtome wherein the stereomicroscope defines an optical axis, and the region of the cutting edge of the knife being observable with the stereomicroscope, and an illumination system mounted in the cooling chamber emits light which is directed onto a surface of the knife in such a way that the light reflects from the surface toward the stereomicroscope.
9. The system as defined in Claim 8, wherein the light reflects from the surface substantially parallel to an optical axis of the stereomicroscope.

10. The system as defined in Claim 8, wherein the illumination system is constructed from several LEDs.
11. The system as defined in Claim 10, wherein segments of the several LEDs are capable of being switched on and off individually in order to implement an oblique illumination of the surface of the knife.
12. The system as defined in Claim 10, wherein the illumination system is constructed from a first, a second, a third, a fourth, and a fifth LED.
13. The system as defined in Claim 12, wherein operation of the first and the second LED implements an oblique illumination of the surface of the knife.
14. The system as defined in Claim 12, wherein operation of the fourth and the fifth LED implements an oblique illumination of the surface of the knife.
15. The system as defined in Claim 8 wherein the cooling chamber is cup-shaped and is closed off by a lid having an opening; and the illumination system is mounted directly under the lid of the cooling chamber.
16. The system as defined in Claim 15 wherein the knife, the surface of the knife, the cutting edge, and the sample holder with the sample are observable through the opening in the lid.